Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A holographic recording method for irradiating a recording layer of a holographic recording medium with an object beam and a reference beam through an object optical system and a reference optical system, respectively, so that a data page is recorded thereon in the form of interference fringes, the method comprising:

exercising control of the object optical system between an exposure direction and a non-exposure direction, so that the object beam in the object optical system is reflected in an exposure direction so as to be incident on the holographic recording medium or in a non-exposure direction so as not to be incident on the holographic recording medium selectively pixel by pixel in accordance with the data page to be recorded;

recording data pages by N exposures<u>, in which N bit map images exposed in N separate exposure times so that they summed up,</u> for each data page at (N + 1) levels of gradation with respect to each of areas of the recording layer corresponding to a single pixel of the data page by the object beam with a single exposure time t_1 given by dividing t_0 by N, where t_0 is an exposure time necessary for exposing one of the areas of the recording layer corresponding to a single pixel of the data page as much as approximately 100%, and N is an integer of not less than 2; and

exposing the areas as much as approximately 100% by exposure of N times, as much as 0% by exposure of 0 times and as much as more than 0% and less than 100% by exposure of between 1 and (N-1) times.

2. (Canceled)

3. (Previously Presented) The holographic recording method according to claim 1, wherein the object beam is pulsed to make a pulsed exposure for the single exposure time t_1 by means of any one of:

intermittent interruption of an optical path of the object beam; and

intermittent interruption of source light of the object beam and the reference beam.

4. (Previously Presented) The holographic recording method according to claim 1,

wherein the reflection of the object beam in the exposure direction or in the non-exposure direction is controlled pixel by pixel by using a micromirror device having an array of micromirrors corresponding to the respective pixels of the data page, the micromirrors being switchable and controllable in the direction of reflection, and

the object beam is pulsed to make a pulsed exposure for the single exposure time t_1 by means of any one of:

intermittent interruption of an optical path of the object beam; and

intermittent interruption of source light of the object beam and the reference beam.

5. (Previously Presented) The holographic recording method according to claim 1, wherein:

a beam intensity distribution of the object beam immediately before the reflection is divided into (N + 1) levels of areas; and

the number of times of exposure for the time t_1 within the exposure time t_0 is controlled with respect to each of the areas so that the object beam after the reflection has a generally-uniform beam intensity distribution.

6. (Currently Amended) A holographic recording apparatus comprising:

a laser light source;

a first polarizing beam splitter for splitting a laser beam from the laser light source into an object beam and a reference beam;

an object optical system for introducing the object beam to a holographic recording medium; and

a reference optical system for introducing the reference beam to the holographic recording medium,

wherein the object optical system includes:

a second polarizing beam splitter for transmitting or reflecting the object beam,

a reflection type spatial light modulator capable of intensity-modulating the object beam transmitted through the second polarizing beam splitter with respect to each of pixels of a data page to be recorded, and reflecting it in an exposure direction toward the second polarizing beam splitter or in a non-exposure direction different thereto selectively, and

a quarter-wave plate arranged on an optical path between the second polarizing beam splitter and the reflection type spatial light modulator,

a control unit for controlling the number of times of exposure within the exposure time t_0 with respect to each of the pixels of the reflection type spatial light modulator, the control unit controlling the reflection type spatial light modulator between the exposure direction and the non-exposure direction,

the object beam reflected by the reflection type spatial light modulator and the second polarizing beam splitter interferes with the reference beam in the holographic recording medium,

the reflection type spatial light modulator is configured so that it is capable of making N exposures ~~of~~in which N images of bit map are exposed in N separate exposure times so that they summed up to each data page and capable of at most N times of reflection with respect to each of areas of the recording layer within an exposure time t_0, where t_0 is the exposure time necessary for exposing one of the areas of the recording layer by the object beam corresponding to a single pixel of the data page as much as approximately 100%, a single exposure time t_1 is given by dividing t_0 by N, N is an integer of not less than 2, and

the reflection type spatial light modulator being further configured to expose the areas as much as approximately 100% by exposure of N times, as much as 0% by exposure of 0 times, and as much as more than 0% and less than 100% by exposure of between 1 and (N-1) times.

7. (Original) The holographic recording apparatus according to claim 6, wherein the reflection type spatial light modulator is made of a micromirror device having an array of micromirrors corresponding to the respective pixels of the data page, the micromirrors being switchable and controllable in a direction of reflection.

8. (Previously Presented) The holographic recording apparatus according to claim 6, wherein the laser light source is configured so that the laser light source is capable of pulsed light emission with generally the same pulse width as the single exposure time t_1 of the reflection type spatial light modulator.

9. (Canceled)

10. (Previously Presented) The holographic recording apparatus according to claim 6,

wherein the control unit is configured to control the number of times of exposure within the exposure time t_0 pixel by pixel so that a beam intensity distribution after the reflection by the reflection type spatial light modulator becomes generally uniform.

11. (Previously Presented) The holographic recording apparatus according to claim 8, further comprising:

a control unit for controlling the number of times of exposure within the exposure time t_0 with respect to each of the pixels of the reflection type spatial light modulator,

wherein the control unit is configured to control the number of times of exposure within the exposure time t_0 pixel by pixel so that a beam intensity distribution after the reflection by the reflection type spatial light modulator becomes generally uniform.

12. (Canceled)

13. (Original) The holographic recording apparatus according to claim 10, wherein the control unit is configured to control the number of times of exposure so that the object beam after the reflection becomes generally uniform in beam intensity, based on beam intensity distribution information on each area when the beam intensity distribution of the object beam immediately before incident on the reflection type spatial light modulator is divided into (N + 1) levels of areas.

14. (Original) The holographic recording apparatus according to claim 11, wherein the control unit is configured to control the number of times of exposure so that the object beam after the reflection becomes generally uniform in beam intensity, based on beam intensity distribution information on each area when the beam intensity distribution of the object beam immediately before incident on the reflection type spatial light modulator is divided into (N + 1) levels of areas.

15. (Previously Presented) The holographic recording apparatus according to claim 10, wherein the control unit is configured to control the number of times of exposure so that the object beam after the reflection becomes generally uniform in beam intensity, based on beam intensity distribution information on each area when the beam intensity distribution

of the object beam immediately before incident on the reflection type spatial light modulator is divided into (N + 1) levels of areas.

16. (Currently Amended) A holographic recording method for irradiating a recording layer of a holographic recording medium with an object beam and a reference beam through an object optical system and a reference optical system, respectively, so that a data page is recorded thereon in the form of interference fringes, the method comprising:

exercising control of the object optical system between an exposure direction and a non-exposure direction, so that the object beam in the object optical system is reflected in an exposure direction so as to be incident on the holographic recording medium or in a non-exposure direction so as not to be incident on the holographic recording medium selectively pixel by pixel in accordance with the data page to be recorded;

making N exposures ~~of~~ in which N images of bit map are exposed in N separate times so that they summed up to the data page with (N + 1) levels of gradation with respect to each of areas of the recording layer corresponding to a single pixel of the data page by the object beam with a single exposure time t_1 given by dividing t_0 by N, where t_0 is an exposure time necessary for exposing one of the areas of the recording layer corresponding to a single pixel of the data page as much as approximately 100%, and N is an integer of not less than 2;

exposing the area as much as approximately 100% by exposure of N times, as much as 0% by exposure of 0 times, and as much as more than 0% and less than 100% by exposure of between 1 and (N - 1) times; and

the object beam is pulsed to make a pulsed exposure for the single exposure time t_1 by means of pulsed light emission from a light source of the object beam and the reference beam.